

CLAIMS

1. Motor vehicle with a diesel propulsion engine whose exhaust system is equipped with a discontinuously regenerating exhaust gas purification system which comprises a catalytic converter unit burning diesel fuel catalytically, characterized by the following features:
the catalytic converter unit (6) has a fuel evaporator unit connected upstream;
the fuel evaporator unit (11) comprises an electrical heating element and is connected to the vehicle fuel tank (14) using a fuel line (12);
the fuel evaporator unit (11) is installed with spatial separation from any exhaust gas carrying components;
a fuel vapor feeding channel (30) which upstream of the catalytic converter unit (6) discharges into an exhaust gas carrying component, extends between the fuel evaporator unit (11) and an exhaust carrying component.
2. Motor vehicle according to Claim 1,
characterized in that,
the exhaust gas purification system comprises a discontinuously regenerating particulate filter (8) and, connected upstream of it, an oxidizing converter unit (4), where in the regeneration mode and through catalytic combustion of the fuel vapors produced by the fuel evaporator unit (11), the oxidizing converter unit heats up the exhaust gases flowing toward the particulate filter.
3. Motor vehicle according to Claim 1
characterized in that,
for a catalytic converter unit the exhaust gas purification system includes a discontinuously regenerating NO_x accumulating converter.

4. Motor vehicle according to Claims 1 through 3 characterized in that, the fuel vapor feeding channel (30) discharges into a cross-sectional restriction of the respective exhaust gas carrying component configured as a venturi nozzle.
5. Motor vehicle according to Claims 1 through 4 characterized in that, the fuel evaporator unit (11) comprises an upright mounted glow plug (18) which, while maintaining an annular gap (22), is encompassed by a jacket tube (23) into which both the fuel line (12) and the fuel vapor feeding channel (30) discharge.
6. Motor vehicle according to Claim 5 characterized in that, the inside width of the annular gap (22) is between 0.6 mm and 2 mm.
7. Motor vehicle according to Claim 5 or 6 characterized in that a spiral guide element (29) is located in the annular gap (22).
8. Motor vehicle according to the Claims 5 through 7 characterized in that, the end of the fuel vapor feeding channel (30) oriented toward the fuel evaporator unit (11), extends into the jacket tube (23).
9. Motor vehicle according to one of the Claims 5 through 8 characterized in that, the jacket tube (23) is encompassed by an insulator (33).

10. Motor vehicle according to one of the Claims 1 through 9 characterized in that,
the fuel evaporator unit (11) has a preheating stage (38) connected upstream of it for the fuel to be evaporated.
11. Motor vehicle according to Claim 10 characterized in that,
the preheating stage (38) comprises an intermediate accumulator (39) with a heating device (40) installed in it.
12. Motor vehicle according to Claim 11 characterized in that,
the preheating stage comprises a heat exchanger exposed to the exhaust gas stream.
13. Motor vehicle according to one of the Claims 1 through 4 characterized in that,
the fuel evaporator unit (11) comprises a pressure vessel (44) that shuts off using two valves (46, 47) and has a heating device (45) located inside of it.
14. Motor vehicle according to Claim 13 characterized in that,
the fuel evaporator unit (11) has a secondary heater (49) connected downstream of it for the fuel vapors (48) discharged from the pressure vessel (44).
15. Motor vehicle according to one of the Claims 1 through 14 characterized in that,
in the area of the fuel vapor feeding channel (30) outlet, the ratio of the cross-section of the fuel vapor feeding channel to the cross-section of the exhaust gas carrying component, is between 0.006 and 0.015.

16. Motor vehicle according to Claim 2
characterized in that,
the oxidizing converter unit (6) and the particulate filter (10) are installed in separate housings (5; 9).
17. Motor vehicle according to Claim 2
characterized in that,
both the oxidizing converter unit (6) and the particulate filter (10) are installed in a common housing.
18. Motor vehicle according to Claim 17
characterized in that,
the oxidizing converter unit (6) is represented by a catalytically coated area of the particulate filter (10).
19. Motor vehicle according to Claim 2
characterized in that,
a temperature sensor (36) is located between the oxidizing converter unit (6) and the particulate filter (10) and connected to a controller (17) which in the regeneration mode controls the delivery rate of a fuel pump (13) that feeds the fuel evaporator unit (11), in dependence on the exhaust gas temperature measured upstream of the particulate filter (10).